

## SOME REMARKS UPON LIMOSELLA

BY FRANCIS W. PENNELL

Professor Fernald's interesting discussion of our eastern coastal species of *Limosella* reached me as I was on the point of taking up the same problem. I had suspected, and had tentatively so marked it in my notes, that our eastern species would prove distinct from *L. tenuifolia* Wolf of Europe, and should be called *L. subulata* Ives. That it was specifically distinct from the plant of the Rocky Mountains I was certain, having studied and made descriptions of both in their native environments.

My notes, made from living plants and supplemented by herbarium study, show the following contrast between *Limosella aquatica* of the Central Rockies and nearby plains and *L. subulata* of the Atlantic seaboard:

*L. aquatica*.—Corolla about 2 mm. wide; lobes somewhat spreading, acute or acutish, dull-white. Anthers about 1 mm. long, purplish. Capsules 2.5–3.2 mm. long, borne on spreading pedicels. Seeds .5 mm. long, dull amber-brown, about 6–7 ridged, relatively coarsely transverse-lined. Calyx-lobes uniform. Leaves about 3 cm. long, consisting of a petiole and a more or less dilated lanceolate blade about 1 cm. long. Plant rosulate, 10–20 leaved, surrounded by numerous radiating few-jointed stolons.

*L. subulata*.—Corolla about 3 mm. wide; lobes widely spreading, obtuse, white, tinged with lavender-blue. Anthers about 2 mm. long, dark purple-blue. Capsules 2–2.3 mm. long, borne on arcuately decurved pedicels. Seeds .6–.7 mm. long, bright amber-brown, about 8–9 ridged, more finely transverse-lined. Calyx-lobes upcurved, in fruit the tube tending to split on the anterior side. Leaves 1.5–2 cm. long, nearly filiform, terete, obtuse. Plant chain-like, consisting of plantlets borne on joints of extensively creeping filiform stolons, each plantlet usually 5–10 leaved.

In agreement with Professor Fernald, I am unable to distinguish the plant of the Rockies from that of Eurasia. The western plant sometimes has pinkish corollas, but, so far as I can

find, variability of color between white and pink is characteristic of the European plant,\* rather than a normal "pink or flesh-color." This species, *Limosella aquatica*, appears to be the most cosmopolitan member of the Scrophulariaceae, and its simple flower-structure and acaulescent habit mark it as primitive. It occurs to-day upon all the continents, and is even credited to New Zealand. Whether eventual knowledge will show that it has held conservatively true throughout its supposed range may be doubted, but certain it is that deviations are mostly slight and remote. However in widely scattered parts of the earth it has "thrown off" suggestively parallel species. Thus *Limosella subulata* may be closely duplicated in the Vancouver Island region, and in Argentina—but *a priori* assumption would be that these are not identical with it.

My field-acquaintance with *Limosella subulata* has been confined to one colony, but that fortunately extensive, growing about the margins of Old Sams Pond, Point Pleasant, New Jersey. This is a small pond of fresh water lying in the lee of the coast sand-dunes. The Garden herbarium shows a considerable series of specimens from sandy margins of such fresh sand-dune ponds, ranging from here northeastward to Nantucket.† These plants are partially, though inconstantly recognizable, from the species of muddy saline tidal habitats by their pedicels being more recurving, their capsules blacker; their sepals more

\* The following quotations, chosen from various countries, confirm this: Baxter, Brit. Phan. Bot. pl. 212, "pale rose-colored or white," illustrated as white; Sowerby, Engl. Bot. 5: pl. 357, "whitish without, red on the inside," illustrated as pink; Reichenbach, Ic. Fl. Germ. 20: 54. pl. 1722, "corolla albida; maculae brunneae sub basi cujusvis laciniae corollae, suppositae intus saltem maculae citrinae," illustrated as described; Coste, Fl. France 3: 27, "blanches ou roses"; Murino, Fl. Galicia 100. "blanca"; Schinz & Keller, Fl. Schweiz 456. "weisse od. rotlichweisse"; Parlatores, Fl. Ital. 6: 546, "bianchiccio."

† A letter from Mr. E. P. Bicknell, concerning *Limosella* on Nantucket, emphasizes its occurrence about the sandy margins of "closed," that is completely land-locked ponds. Some of these are freshwater, but one is mentioned as probably at least partly brackish. He calls attention to the fact that in ponds which stretch some miles inland from the shore *Limosella* will occur only at the shoreward extremities. Specimens sent from the deeper water of certain ponds much exceed in length of leaves the dimensions of the key above, and in coarseness of growth are like the tide-water plant. The halophytism of *Limosella subulata* would make a valuable physiological study.

frequently obtuse, and the leaves more slender. If these modifications be wholly ecological, are they mainly a response to a sandy instead of mud substratum, or to the lack of salt, or in good part to freedom from periodic inundation?

The range of *Limosella subulata* must be extended southward to Chesapeake Bay. *G. H. Shull 306* is from the "northeast shore of Gunpowder River, one third mile northeast of its mouth," Maryland, and certainly from between high and low tide. This collection and most of those from the tide-water of the Delaware River are of plants coarser, usually with longer and wider leaves, than the typical New England form. While the plant occurs on the Delaware between Philadelphia and Trenton, as near Burlington, New Jersey, this is much above the usual limit of salt water. As a general statement, we may say that *Limosella subulata* is primarily a plant of brackish soil, but that it is fully able to meet a dilute or even quite non-saline environment.

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## IN THE WAKE OF THE ENEMY!

This dirge for the orchards of France may be familiar to many of our readers, but losses described by the letter immediately following the verse, are just as indefensible. Can there still be found in this country people who, in spite of acts like these, cherish pre-war delusion about the "The Kindly German?"—ED.

### THE TREES OF FRANCE.

Hush, little leaves, your springtime dance,  
Sigh for the murdered trees of France.

Friends were they of the peasant folk,  
Friends whom the birds and kine bespoken.

Spoil are they of destroying lust,  
Not of the battle stroke and thrust.

They are a garden still to see,  
They are the world's Gethsemane.

Hush, little leaves, your springtime dance,  
Sigh for the murdered trees of France.

—McLandburgh Wilson.